

ART 34 AMDT

Claims

(Amended on June 20, 2000 under PCT Article 34)

1. (Amended) A sputtering target consisting essentially
5 of high purity Nb of which Ta content is 3000ppm or less,
wherein dispersion of the Ta contents over the whole target
is within $\pm 30\%$.

2. (Deleted).

3. The sputtering target as set forth in claim 1:
10 wherein the Ta content is 1000ppm or less.

4. The sputtering target as set forth in claim 1:
wherein oxygen content in the target is 200ppm or less.

5. The sputtering target as set forth in claim 1:
15 wherein an average grain diameter of the Nb is $100\mu\text{m}$
or less.

6. The sputtering target as set forth in claim 1:
wherein each grain of the Nb has a grain diameter in
the range of 0.1 to 10 times an average grain diameter, and
each of ratios of grain sizes of adjacent grains is in the
20 range of 0.1 to 10.

7. The sputtering target as set forth in claim 1:
wherein the sputtering target is bonded with a backing
plate.

8. The sputtering target as set forth in claim 7:
25 wherein the sputtering target and the backing plate are
diffusion bonded.

9. The sputtering target as set forth in claim 1:
wherein the sputtering target is applied in forming a

Nb film as liner material to an Al film or an Al alloy film.

10. A sputtering target consisting essentially of high purity Nb:

wherein each grain of the Nb has a grain diameter in the range of 0.1 to 10 times an average grain diameter, and each of ratios of grain sizes of adjacent grains is in the range of 0.1 to 10.

11. The sputtering target as set forth in claim 10:
wherein dispersion of the ratios of grain sizes of the
10 adjacent grains all over the target is within $\pm 30\%$.

12. The sputtering target as set forth in claim 10:
wherein each of the ratios of the grain sizes of the
adjacent grains is in the range of 0.5 to 5.

13. The sputtering target as set forth in claim 10:
wherein an average grain diameter of the Nb is $100\mu\text{m}$
or less.

14. The sputtering target as set forth in claim 10:
wherein oxygen content in the target is 200ppm or less.

15. The sputtering target as set forth in claim 10:
20 wherein the sputtering target is bonded with a backing
plate.'

16. The sputtering target as set forth in claim 15:
wherein the sputtering target and the backing plate are
diffusion bonded.

25 17. The sputtering target/as set forth in claim 11:
wherein the sputtering target is used in forming a Nb
film as liner material to an Al film or an Al alloy film.

18. (Amended) ~~A sputtering target consisting~~

essentially of high purity Nb of which oxygen content is 200ppm or less, wherein dispersion of the oxygen contents over the whole target is within $\pm 80\%$.

19. (Deleted).

5 20. The sputtering target as set forth in claim 18: wherein the oxygen content is 100ppm or less.

21. The sputtering target as set forth in claim 18: wherein the sputtering target is bonded with a backing plate.

10 22. The sputtering target as set forth in claim 21: wherein the sputtering target and the backing plate are diffusion bonded.

15 23. The sputtering target as set forth in claim 18: wherein the sputtering target is used for forming a Nb film as liner material to an Al film or an Al alloy film.

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